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09/612,607	07/07/2000	Daniel E Grupp	003771.P001D	9241

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EXAMINER

WILLE, DOUGLAS A

ART UNIT	PAPER NUMBER
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2814

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Please find below and/or attached an Office communication concerning this application or proceeding.



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BEFORE THE BOARD OF PATENT APPEALS
AND INTERFERENCES

Paper No. 12

Application Number: 09/612,607
Filing Date: July 07, 2000
Appellant(s): GRUPP, DANIEL E

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Tarek Fahmi
For Appellant

EXAMINER'S ANSWER

This is in response to the appeal brief filed 4/22/02.

(1) *Real Party in Interest*

A statement identifying the real party in interest is contained in the brief.

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(2) *Related Appeals and Interferences*

A statement identifying the related appeals and interferences which will directly affect or be directly affected by or have a bearing on the decision in the pending appeal is contained in the brief.

(3) *Status of Claims*

The statement of the status of the claims contained in the brief is correct.

(4) *Status of Amendments After Final*

The appellant's statement of the status of amendments after final rejection contained in the brief is correct.

(5) *Summary of Invention*

The summary of invention contained in the brief is correct.

(6) *Issues*

The appellant's statement of the issues in the brief is substantially correct. The changes are as follows: In view of Applicant's description of the non-uniform density of energy states the 112 rejection is withdrawn.

(7) *Grouping of Claims*

Appellant's brief includes a statement that claims stand or fall together is accepted.

(8) *Claims Appealed*

The copy of the appealed claims contained in the Appendix to the brief is correct.

(9) *Prior Art of Record*

Luryi et al. "Resonant tunneling of two-dimensional electrons through a quantum wire: A negative transconductance device." Appl. Phys. Lett., vol 47 (15 Dec 1985), pp 1347-1349

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(10) Grounds of Rejection

The following ground(s) of rejection are applicable to the appealed claims:

Claim Rejections - 35 USC § 102

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

2. Claims 23 – 25 are rejected under 35 U.S.C. 102(b) as being anticipated by Luryi et al.
3. With respect to claims 23 and 24, Luryi et al. show a method of forming a resonant tunneling device with a capacitively coupled gate (see cover Figure) where the AlGaAs tunnel barriers have less than the quantum resistance, the energy levels in the well (GaAs) are typical well levels and the energy levels will be shifted by the application of a voltage to the gate.
4. With respect to claim 25, a current is passed through the device from terminal V_s to V_d .

(11) Response to Argument

Applicant at page 4 addresses the 35 U.S.C. 112, second paragraph rejection and in view of Applicant's explanation it is understood that the non-uniform density of states refers to the states on either side of the band gap, the states constituting the conduction and valence bands, of the semiconductor region that forms the island and the rejection stands withdrawn.

At page 5, Applicant states that the claimed device is not the same as the Luryi et al. device but note that the Luryi et al. device has a pair of tunnel junctions represented by the AlGaAs barriers with an island of GaAs between. Note that the specification describes the island as a semiconductor with a band gap, but this describes the GaAs material of Luryi et al. Note that

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in Luryi et al., in Figure 2, only the conduction band is shown and the full band structure will also have a valence band as shown in Applicant's Figure 2. Thus the band gap of Luryi et al. provides the non-uniform density of states that is claimed.

Applicant states that Examiner is mistaken, and states, that the present invention has a non-uniform density of states but as described above this is just what Luryi et al. shows.

Applicant then states that the device in which conduction and valiance (sic) bands behave as continuous, and not quantum, energy bands. However, no such feature is in the claims. Note also that in characterizing the central region as an island, it inherently shows quantum effects and if it is so large that it does not show quantum effects, it is not an island.

Applicant states that the band structure may look similar but the origin is entirely different however, only the claimed features are examined.

For the above reasons, it is believed that the rejections should be sustained.

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Respectfully submitted,

daw *Stw*
June 4, 2002

Conferees

An Appeal conference was attended by:

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